

THE NEW

Millennium

P R O G R A M

Deep Space One Mission



Beacon Monitor Operations Experiment

Technology for Low Cost Operations

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What is It?

The beacon monitor technology is a mission operations concept and required components to allow the spacecraft to initiate telemetry tracking only when ground intervention is required

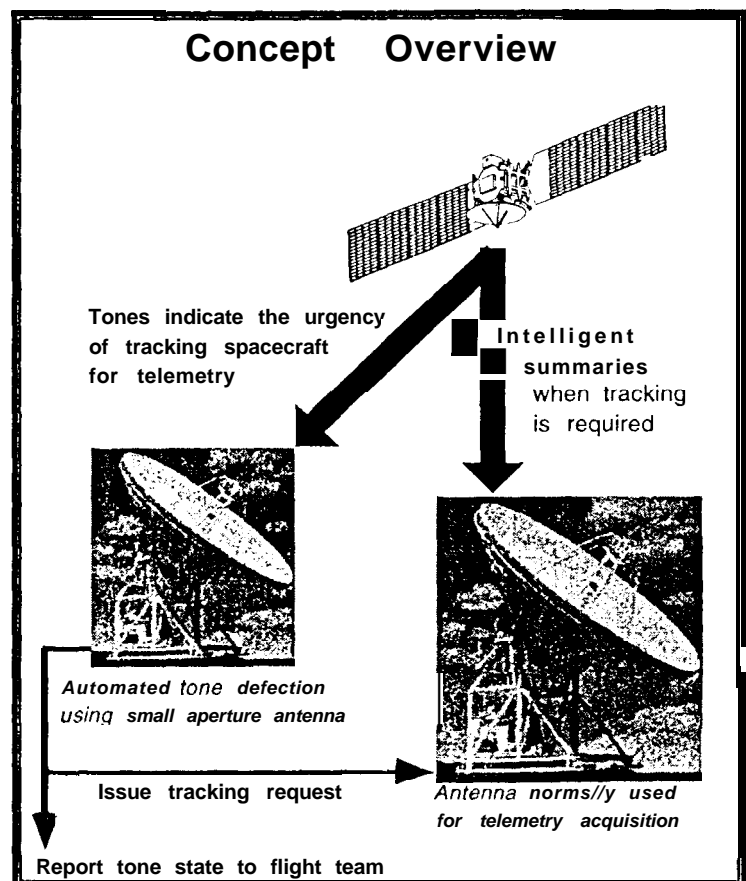
Why Is It Exciting Technology?

- Mission operations cost is reduced substantially because there is less contact with the spacecraft
- Reduced loading on ground antennas enables more spacecraft to be operated with existing ground resources
- Techniques for onboard summarization significantly exceed the current state-of-the-art in onboard data monitoring

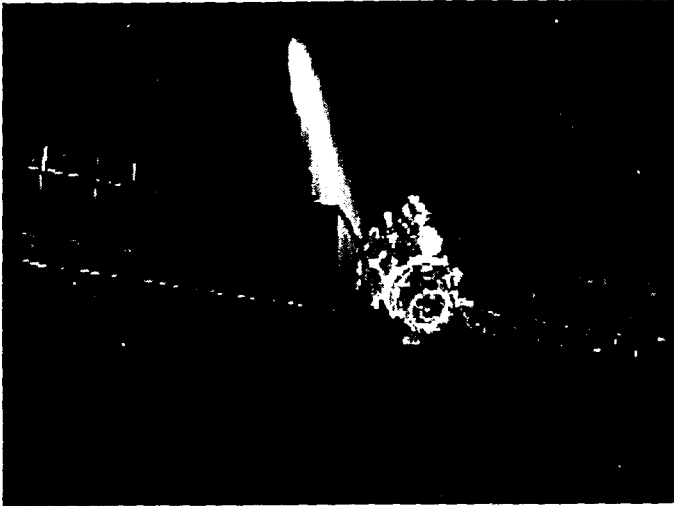
How Does It Work?

- Instead of routinely downlinking telemetry, the spacecraft evaluates its own state and transmits one of four beacon tones that reveal how urgent it is to track the spacecraft.
- When telemetry tracking is required, the spacecraft creates and downlinks "intelligent" summaries of onboard conditions instead of sending bulk telemetry to the ground

Concept Overview



Beacon tones and intelligent onboard engineering data summarization are the two principal technology components of the beacon monitoring operations concept.



The Beacon Monitor Operations Technology will be demonstrated on NASA's Deep Space One Mission, depicted here in this artist's rendering.

When Will It Be Demonstrated?

- Will be flight demonstrated on the New Millennium Program Deep Space Flight 1 (DS1) mission beginning in July 1998
- Planned for use on upcoming NASA missions, including missions to Pluto and Europa
- Planned demonstrations on University and other government space missions



- Deep space missions with significant cruise periods
- Earth orbiter missions with routine operations
- Programs planning to operate fleets of spacecraft



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